

REMARKS

Claims 13-24 are currently pending in this application with claim 13 in independent form. Claim 23 has been amended. Support for this amendment can be found, for example on page 3, lines 4-8 of the application as filed. In view of the following arguments, removal of the rejections and allowance of claims 13-24 is respectfully requested.

Claim 13 is directed towards an artificial intra ocular lens of variable optical power comprising at least two optical elements. The two optical elements can be shifted relative to each other in a direction extending perpendicular to the optical axis. Furthermore, the optical elements have such a shape that they exhibit, in combination, different optical powers at different relative positions. The optical elements are each connected to an elastic haptic and a non-elastic haptic, and the elastic haptic of one element is connected to the non-elastic haptic of the other element through a connecting anchor.

Specification Objections

In view of the present amendments to the specification, Applicant respectfully requests the removal of the objections to the specification.

Additionally, the Examiner indicates that specific guidelines should be followed for the layout of the specification. Applicant directs the Examiner's attention to the Preliminary Amendment filed by Applicant on August 14, 2006, wherein the layout of the specification was amended in accordance with the guidelines set forth in 37 C.F.R. 1.77(b).

35 U.S.C. §112

Next, claim 23 has been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Specifically, the Examiner asserts that the term "GRIN type" of claim 23 is unclear. In view of the claim amendment to claim 23, Applicant believes that claim 23 is definite and requests the removal of the rejection of claim 23.

35 U.S.C. §102

Claims 13-15, 17-22 and 24 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,231,603 to Lang et al. (hereinafter "the Lang patent").

The Lang patent is directed towards an intra ocular lens, wherein the lens or a part thereof moves under the influence of the action of the natural eye muscle. The lens disclosed in the Lang patent consists of a spherical optical surface which is moveable in the direction parallel to the optical axis of the eye to change dioptré power.

Contrary to the Lang patent, wherein two parts are moveable relative to each other in the direction of the eye axis only, the claimed intra ocular lens comprises at least two optical elements, wherein the two optical elements can be shifted relative to each other in a direction extending perpendicular to the optical axis. Movement in the direction of the eye's axis, as taught by the Lang patent, is the only direction in which one can obtain a change in dioptré power with spherical lenses. Because the Lang patent teaches two parts that are moveable relative to each other in the direction of the eye axis only, the claimed intra ocular lens that comprises at least two optical elements, wherein the two optical elements can be shifted relative to each other in a direction extending perpendicular to the optical axis is believed to be patentable over the Lang patent.

Additionally, the Lang patent discloses a lens that obtains its optical effect by utilizing a single lens that has different optical properties (strengths) depending on the distance from the center of the lens. While a second lens may be present for use with the lens of the Lang patent, the adaptive optical properties would continue to be obtained through the moveable lens only (i.e., a single optical lens). Specifically, relative movement of the lenses of the Lang patent will not vary the optical effect. This is contrary to the claimed invention that comprises a lens having two optical elements which mutually shift perpendicular to the optical axis to exhibit, in combination different optical powers at different relative positions. Because the optical properties obtained through the lens of the Lang patent are obtained through a single lens and relative movement of the lenses of the Lang patent will not vary the optical effect, the claimed invention is not believed to be anticipated by the Lang patent.

Finally, the lens disclosed in the Lang patent consists of a spherical optical surface which is moveable in the direction parallel to the optical axis of the eye to change dioptré power. Contrary thereto, the optical surfaces of the lens in the present application are cubic surfaces (also known as "Alvarez surfaces" and taught by U.S. Patent No. 3,305,294 which is incorporated by reference into the claimed invention) which move in a direction perpendicular to the optical axis to change dioptré power.

For at least the foregoing reasons, the Lang patent is not believed to anticipate claim 13, since the Lang patent does not teach or suggest each and every element of claim 13.

Claim 14 depends from claim 13 and further specifies that the elastic haptics and the non-elastic haptics are connected to opposite sides of the optical elements. The use of haptics which are elastic on one side and rigid on the other side allows movement only in the direction perpendicular to the optical axis. The position of the flexible and the rigid haptics with respect to the optical elements are mutually reciprocal, and allow movement during contraction and relaxation of the eye muscle. Because the Lang patent does not teach the use of haptics which are elastic on one side and rigid on the other side reciprocal to restrict the movement of the optical elements to the direction perpendicular to the optical axis, claim 14 is not believed to be anticipated by the Lang patent. Removal of the rejection and allowance of claim 14 is respectfully requested.

Claims 15, 17-22 and 24 depend either directly or indirectly from claim 13 and are believed to be patentable for at least the aforementioned reasons. Removal of the rejections and allowance of claims 14-15, 17-22 and 24 is respectfully requested.

35 U.S.C. §103

Claim 16 is rejected under 35 U.S.C. §103(a) as being unpatentable over Lang as applied to claim 13 above, and further in view of U.S. Patent No. 6,113,633 to Portney (hereinafter "the Portney patent").

Claim 16 depends from independent claim 13, and further specifies that at least one of the optical elements has at least one saddle shaped surface.

The Portney patent is applied for teaching a saddle shaped surface, wherein the saddle shape is caused by the addition of a supplemental correction lens to a primary correction lens. Specifically, the supplemental lens may be attached to the primary lens to adjust the optical power after the primary intraocular lens is implanted in the eye. The supplemental lens corrects measuring inaccuracies of the strength of the natural eye lens. The supplemental lens does not move relative to the primary lens already present in the eye. Because there is no relative movement between the supplemental lens and the primary lens, there is no accommodative effect.

The resulting saddle shaped surface of the Portney patent surface does not represent a cubic ("Alvarez") surface in shape or function. Additionally, the saddle shaped ocular element of the claimed invention is required to achieve the desired varying optical properties which are obtained through the reciprocal movement of the optical elements in the direction perpendicular to the optical axis. Because the Portney patent does not teach or suggest reciprocal movement between saddle shaped optical elements to achieve varying optical properties, the Portney patent does not account for the deficiencies of the Lang patent. Neither the Lang patent nor the Portney patent either alone or in combination teach or suggest claim 16 of the present invention. Removal of the rejection and allowance of claim 16 is respectfully requested.

Claim 23 is rejected under 35 U.S.C. §103(a) as being unpatentable over Lang as applied to claim 13 above, and further in view of U.S. Patent No. 4,022,855 to Hamblen (hereinafter "the Hamblen patent").

Claim 23 depends from independent claim 13, and further specifies that at least one of the optical elements comprises a diffraction structure according to the Gradient Index (GRIN) principle. As would be understood by one of ordinary skill in the art, the GRIN principle refers to lenses with a radially decreasing refractive index.

The Hamblen patent is applied for teaching a method for making a plastic lens with different indices of refraction.

The Hamblen patent does not account for the deficiencies of the Lang patent, specifically, the Hamblen patent does not teach or suggest an artificial intra ocular lens comprising at least two optical elements which can be shifted relative to each other in a direction extending perpendicular to the optical axis. Since, neither the Lang patent nor the Hamblen patent either alone or in combination teach or suggest claim 23 of the present invention, removal of the rejection and allowance of claim 23 is respectfully requested.

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CONCLUSION

In view of the above amendments and remarks, reconsiderations of the rejections and allowance of all of claims 13-24 are respectfully requested.

Respectfully submitted,
THE WEBB LAW FIRM

By



John W. McIlvaine
Registration No. 34219
Attorney for Applicant
436 Seventh Avenue
700 Koppers Building
Pittsburgh, PA 15219
Telephone: (412) 471-8815
Facsimile: (412) 471-4094
E-mail: webblaw@webblaw.com